1993. ABSTRACT. Pages 30-31 in Prairie Ecosystems: Wetland Ecology, Management and Restoration. Wetland Symposium (August 9-13, 1993, Jamestown, North Dakota)

Effects of Cattail Management on Nesting Marsh Wrens, Red-winged Blackbirds, and Yellow-headed Blackbirds

GEORGE M. LINZ, DAVID L. BERGMAN, DAGE C. BLIXT, AND WILLIAM J. BLEIER

U.S. Department of Agriculture, Denver Wildlife Research Center, North Dakota Field Station, Fargo, ND 58105-5517; U.S. Department of Agriculture, Denver Wildlife Research Center, North Dakota Field Station, Fargo, ND 58105-5517; U.S. Department of Agriculture, Denver Wildlife Research Center, North Dakota Field Station, Fargo, ND 58105-5517; North Dakota State University, Department of Zoology, Fargo, ND 58105-5517

We selected semipermanent cattail (*Typha* spp.) marshes (Type IV) in 1990 and 1991 in northeastern North Dakota to study the effects of fragmenting marsh vegetation on breeding bird populations. In 1990, we randomly designated 12 cattail marshes as either untreated (controls) or treated at 70 or 90% areal spray coverage with aerially applied glyphosate herbicide (5.8 l/ha; RODEO formulation). One control marsh was deleted from the analysis because of cattle grazing.

In 1991 (one year post-treatment), the ratios of live emergent vegetation (LEV), dead emergent vegetation (DE), and open water (OW) in these test marshes were (LEV:DE:OW): controls - 60:18:16; 70% treated - 31:32:20; and 90% treated - 13:50:29. In 1992 (two years post-treatment), the ratios of LEV:DE:OW changed to: controls - 51:15:23; 70% treated - 30:15:30; and 90% treated - 29:24:34. The remaining portions of the marshes consisted of vegetation and bare ground on the edges of the marsh basin.

In June 1991 and 1992, there were fewer marsh wrens (*Cistothorus palustris*) in the 70 and 90% treated marshes than in the controls ($P = 0.019$). During this time, the number of territorial male red-winged (*Agelaius phoeniceus*) and yellow-headed blackbirds (*Xanthocephalus xanthocephalus*) did not differ among treatments ($P = 0.491$; $P = 0.136$, respectively). In 1991, we randomly designated 12 additional cattail marshes as either untreated or receiving 50 or 70% areal spray coverage. In 1992, (one year post-treatment) the ratios of live emergent vegetation, dead emergent vegetation, and open water were (LEV:DE:OW): controls - 57:10:13; 70% treated 17:46:15; and 90% treated - 11:61:12.

In one year post-treatment (June 1992), there were similar numbers of marsh wrens in the controls and 50% treated marshes, but more wrens used the controls than the 70% marshes ($P = 0.0995$). During this time, the number of male red-winged and yellow-headed blackbirds did not differ among treatments ($P = 0.746$: $P = 0.859$, respectively).

Marsh wrens, red-winged blackbirds, and yellow-headed blackbirds, which are common in northeastern North Dakota, begin to nest in cattail marshes in May. The marshes are dominated by dead vegetation and open water in May, and live vegetation is in the early stages of growth. Therefore, males are probably selecting territories based, in part, on the dead vegetation and open water. However, by June live emergent vegetation begins to grow above the dead vegetation, providing additional substrate for late nesting birds and for emerging aquatic invertebrates.

We expected that avian species requiring dense emergent vegetation for nesting substrate would be negatively influenced by the reduction in cattails.

However, data gathered one and two years post-treatment suggest that only marsh wrens were adversely affected by the 70 and 90% spray coverages. Apparently, sufficient nesting substrate was available for yellow-headed blackbirds and red-winged blackbirds one and two years after the herbicide treatments.

These preliminary data indicate that marsh wrens are more sensitive to habitat changes than red-winged or yellow-headed blackbirds. Although marsh wrens are locally abundant in cattail marshes, a broad-scaled cattail eradication program has potential to negatively impact their population.